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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 1132 (2009): Bicycle - Bottom Bracket Adjustable Ball Cup (PH Type) (Amalgamating IS 1133 : 1985, IS 11734, IS 11735 : 1986) [TED 16: Bicycles]



“ज्ञान से एक नये भारत का निर्माण”

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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
साइकिल — नीचे के ब्रैकेट के बाल कप — विशिष्टि
(तीसरा पुनरीक्षण)

Indian Standard
BICYCLE — BOTTOM BRACKET BALL CUPS —
SPECIFICATION
(*Third Revision*)

ICS 43.150

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bicycles Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was first published in 1958 and subsequently revised in 1968 and 1985. Earlier 'PH' Type and 'R' Type bottom bracket ball cups of fixed and adjustable type were covered under four separate standards, namely, IS 1132 : 1985 'Specification for bicycle bottom bracket adjustable ball cup (PH type) (*second revision*)', IS 1133 : 1985 'Specification for bicycle bottom bracket fixed ball cup (PH type) (*second revision*)', IS 11734 : 1986 'Specification for bicycle bottom bracket adjustable ball cup (R type)' and IS 11735 : 1986 'Specification for bicycle bottom bracket fixed ball cup (R type)'. As a result of experience gained by the manufacturers of bicycles, many other forms of bottom bracket ball cups have evolved over a passage of time. This revision of standard is being taken up to amalgamate all the four standards and to include other types of bottom bracket ball cups being used in the bicycle industry, since most of the requirements of all types of bottom bracket ball cups are same. With the publication of this standard IS 1133 : 1985, IS 11734 : 1986 and IS 11735 : 1986 will be withdrawn.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BICYCLE — BOTTOM BRACKET BALL CUPS — SPECIFICATION

(Third Revision)

1 SCOPE

This standard specifies the dimensions and other requirements for bottom bracket ball cups for use with bicycles.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
513 : 1994	Cold-rolled low carbon steel sheets and strips — Specification (<i>fourth revision</i>)
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium — Specification (<i>third revision</i>)
1501 : 2002	Method for Vickers hardness test for metallic materials (<i>third revision</i>)
1570 (Part 3) : 1979	Schedules for wrought steels: Part 3 Carbon and carbon-manganese free cutting steels (<i>first revision</i>)
1573 : 1986	Specification for electroplated coatings of zinc on iron and steel (<i>second revision</i>)
2500 (Part 1) : 2000	Sampling inspection procedures: Part 1 Attributes sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection (<i>third revision</i>)

3 CLASSIFICATION

Bottom bracket ball cups shall be classified as:

- a) *Threaded Ball Cups* — Every set of threaded bottom bracket ball cups, consists of two types of ball cups, namely,
 - 1) Adjustable ball cup for use on LH side of the bicycle bottom bracket shell; and
 - 2) Fixed ball cup for use on RH side of the bicycle bottom bracket shell.
- b) Threaded bottom bracket ball cup sets are of following types:
 - 1) PH type ball cup set.
 - 2) R type ball cup set.
 - 3) Italian type/Hex type ball cup set.
 - 4) Russian type/Slotted type ball cup set.
- c) *Unthreaded Ball Cups* — Collared/fixed type for use on both LH and RH side of the bicycle bottom bracket shell.

4 MATERIAL

4.1 The threaded ball cups shall be manufactured from steel of grade designation 11C10S25 of IS 1570 (Part 3).

4.2 The unthreaded ball cups shall be manufactured from steel conforming to D or DD Grade of IS 513.

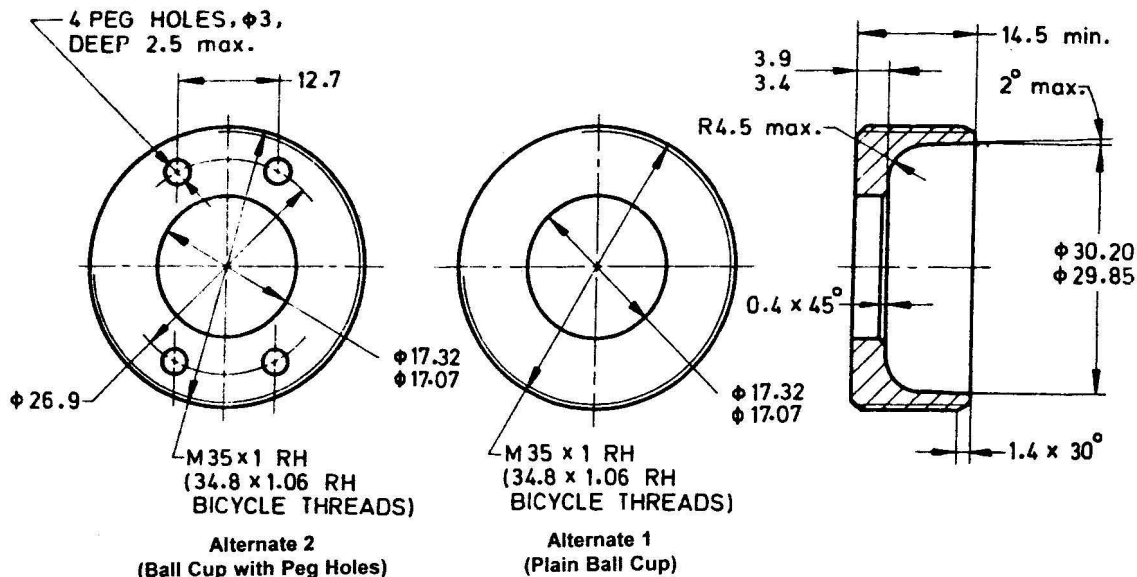
4.3 Alternatively, any case hardening steel shall be used. Such steels shall have a tensile strength of not less than 500 MPa [1 MPa = 0.1 kgf/mm² (approx)] in the core after case hardening.

5 SHAPE AND DIMENSIONS

5.1 Dimensions

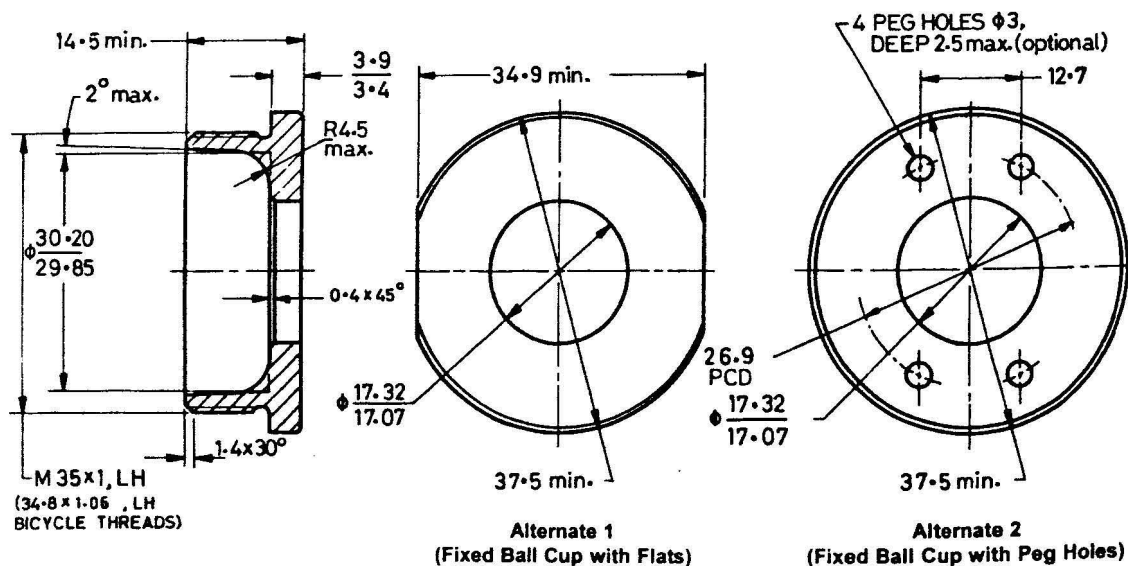
5.1.1 Threaded Ball Cups Sets

5.1.1.1 'PH' type ball cup set, as per Fig. 1A and Fig. 1B.



All dimensions in millimetres.

1A Adjustable Ball Cup 'PH' Type

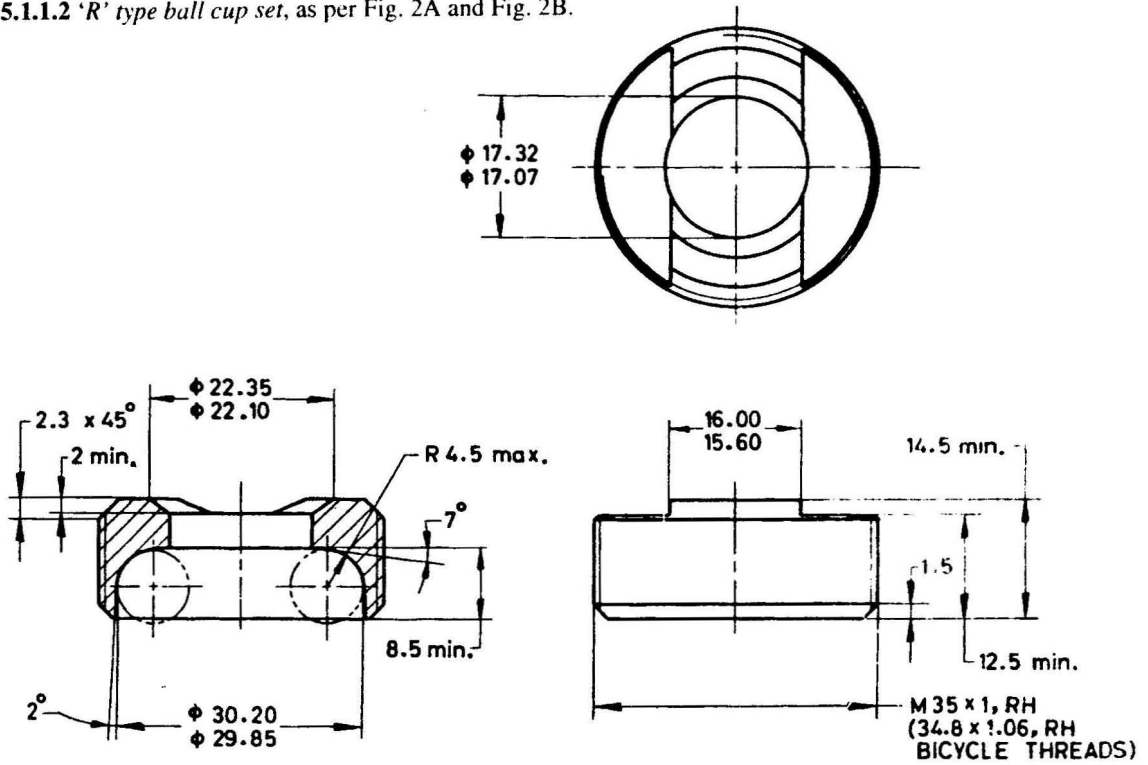


All dimensions in millimetres.

1B Fixed Ball Cup 'PH' Type

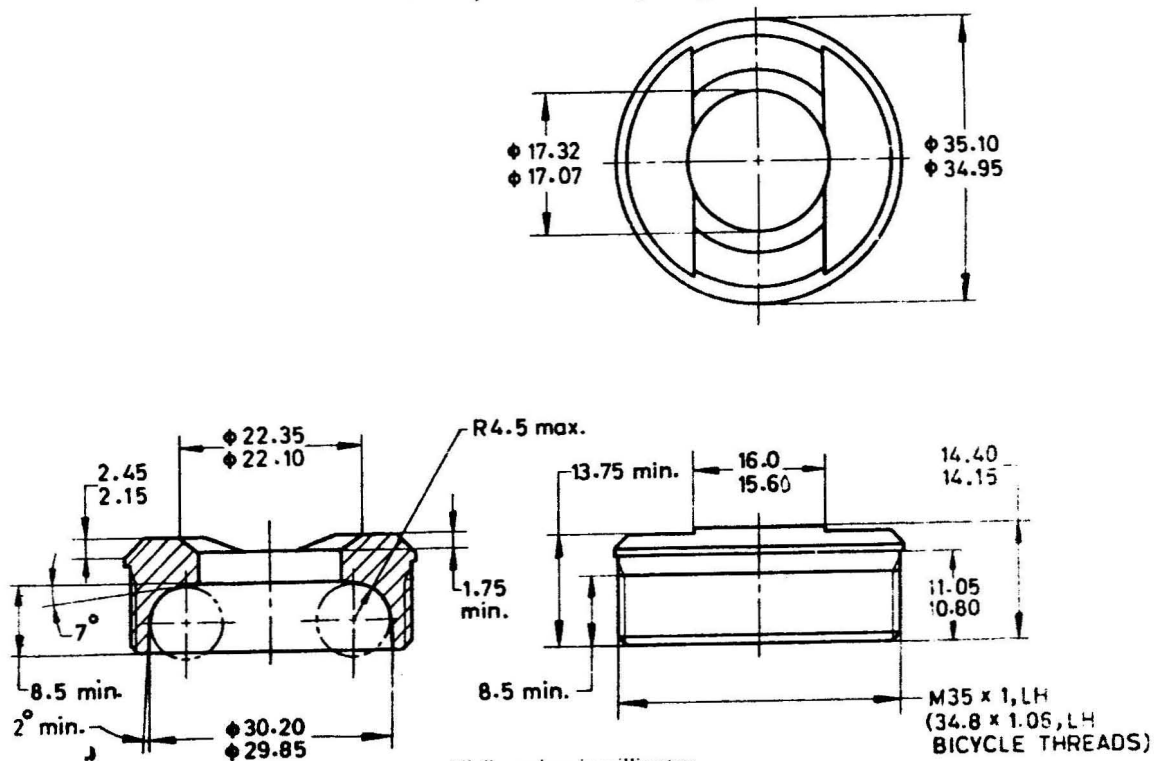
FIG. 1 THREADED BALL CUP SET 'PH' TYPE

5.1.1.2 'R' type ball cup set, as per Fig. 2A and Fig. 2B.



All dimensions in millimetres.

2A Adjustable Ball Cup 'R' Type



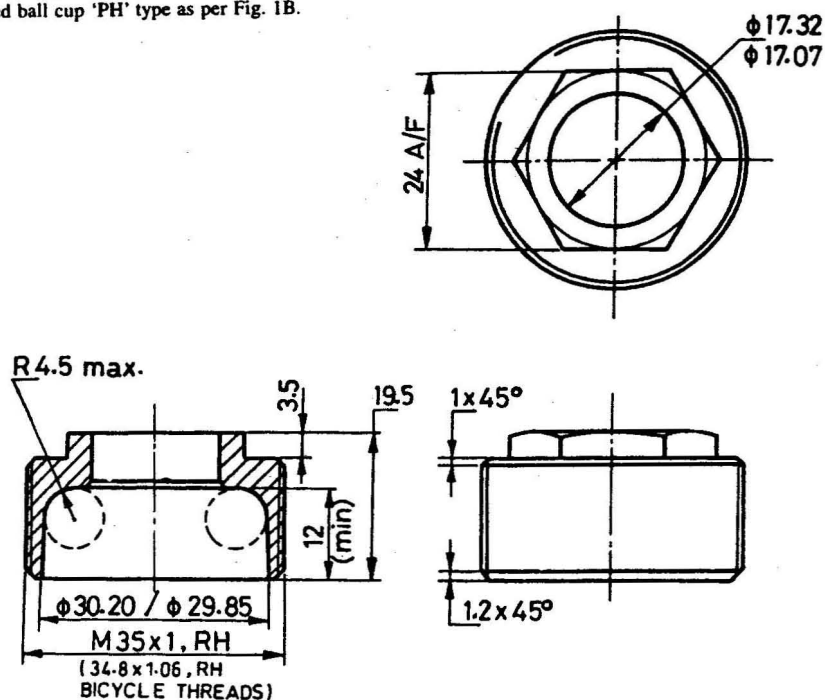
All dimensions in millimetres.

2B Fixed Ball Cup 'R' Type

FIG. 2 THREADED BALL CUP SET 'R' TYPE

5.1.1.3 Italian type/hex type ball cup set, as per Fig. 3 and Fig. 1B.

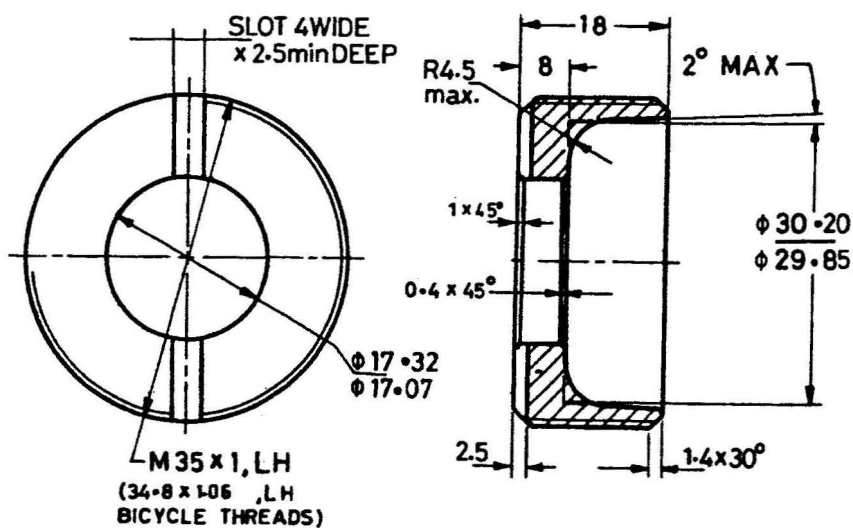
NOTE — Italian type bottom bracket ball cup set is a combination of adjustable threaded ball cup hex type as per Fig. 3 along with fixed threaded ball cup 'PH' type as per Fig. 1B.



All dimensions in millimetres.

FIG. 3 ADJUSTABLE BALL CUP HEX TYPE (TRADE NAME — ITALIAN TYPE)

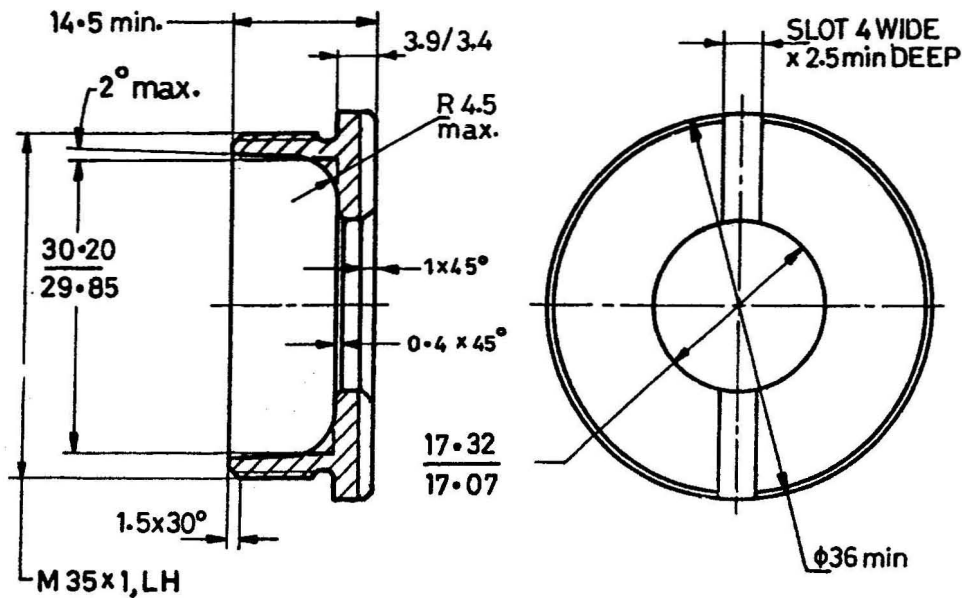
5.1.1.4 Russian type/slotted type ball cup set, as per Fig. 4A and Fig. 4B.



All dimensions in millimetres.

4A Adjustable Threaded Ball Cup Slotted Type (Trade Name — Russian Type)

FIG. 4 RUSSIAN TYPE/SLOTTED TYPE BALL CUP SET (Continued)

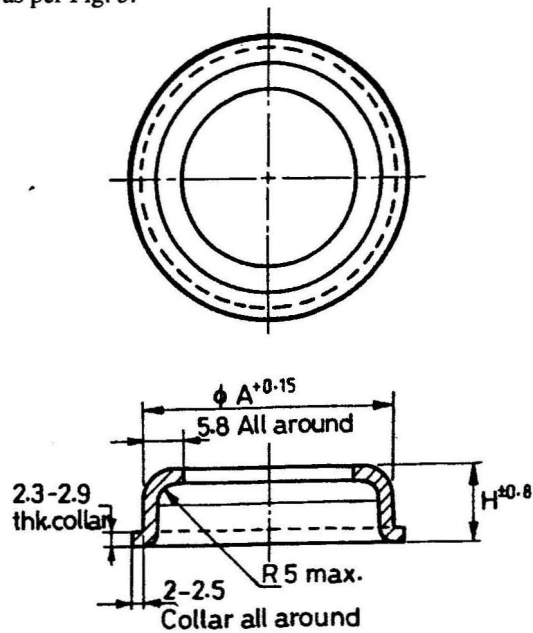


All dimensions in millimetres.

4B Fixed Ball Cup Slotted Type (Trade Name — Russian Type)

FIG. 4 RUSSIAN TYPE/SLOTTED TYPE BALL CUP SET

5.1.2 Unthreaded Ball Cups, as per Fig. 5.



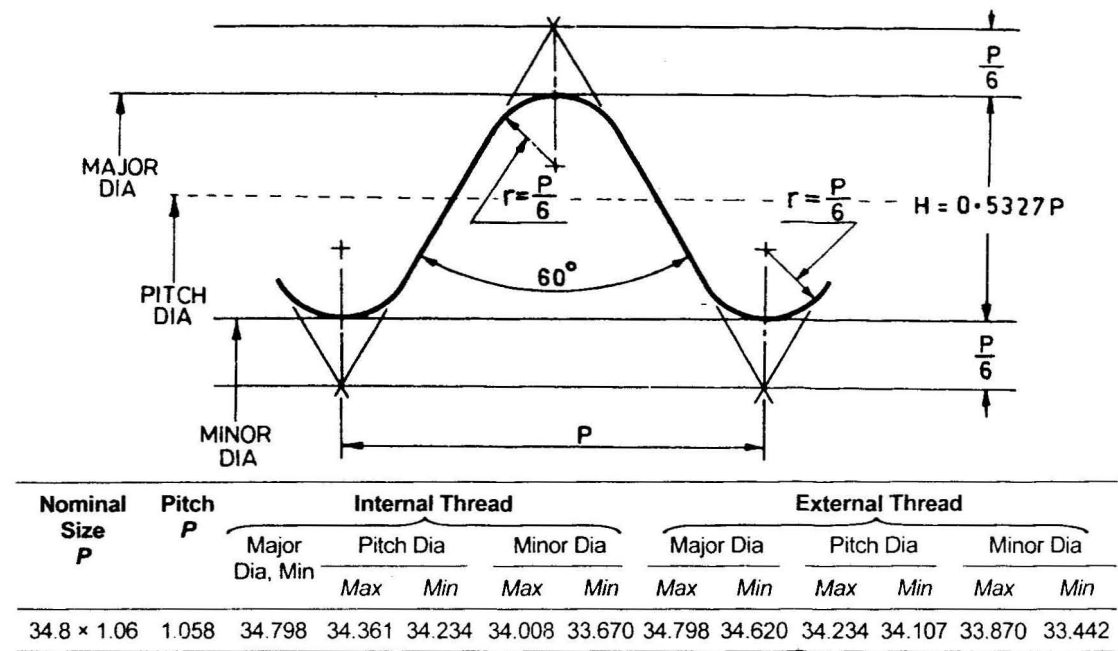
Type – D	34.9	11	Ø7/32" × 10 Balls	38
Type – C	39.7	12	Ø1/4" × 9 Balls	47
Type – B	45	12	Ø1/4" × 11 Balls	51.5
Type – A	51.5	16	Ø5/16" × 9 Balls	56.5
Ball Cup	Ø'A'	'H'	Compatible Ball Cage	Compatible BB Shell OD

All dimensions in millimetres.

FIG. 5 FIXED UNTHREADED BALL CUPS

5.2 Thread Profiles

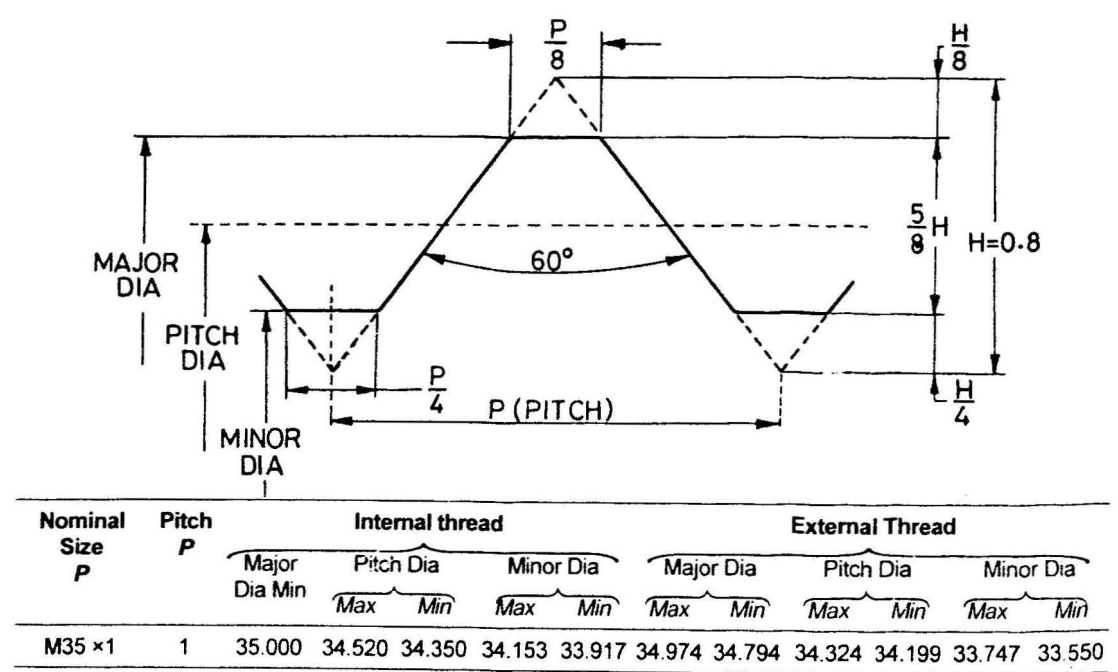
5.2.1 For Bicycle Threads $34.8 \times 1.06/1.37'' \times 24 \text{ TPI}$, as per Fig. 6.



All dimensions in millimetres.

FIG. 6 THREAD PROFILES AND DIMENSIONS FOR BICYCLE THREADS — $34.8 \times 1.06/1.37'' \times 24 \text{ TPI}$

5.2.2 For ISO Metric Threads $M35 \times 1 - 6H/6g$, as per Fig. 7.



All dimensions in millimetres.

FIG. 7 THREAD PROFILES AND DIMENSIONS FOR ISO METRIC THREADS $M35 \times 1 - 6H/6g$
(TRADE NAME — FRENCH TYPE THREADS)

6 HARDNESS

6.1 The ball cup shall be suitably case hardened to a minimum depth of 0.2 mm so as to attain a hardness of 520 to 750 HV (*see* IS 1501) or its equivalent on other scales.

6.1.1 For determination of hardness, any recognized type of hardness tester may be used.

7 WORKMANSHIP AND FINISH

7.1 The cups shall be free from burrs, cracks, scratches, sharp corners and tool marks.

7.2 The threaded portion of cups shall be true to the axis. The threads shall be finished full.

7.3 The finish of the cups shall be either auto black or chemically coloured or zinc plated to service condition No. 2 (classification No. Fe Zn 12) of IS 1573 or nickel and chromium plated to service grade No. 1 designation Fe/Ni 10b Cr r of IS 1068.

8 MARKING

The cups or the packages according to the delivery unit shall be marked with the manufacturer's name or abbreviation on a conspicuous place by any indelible means.

8.1 BIS Certification Marking

The cups may also be marked with the Standard Mark.

8.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to the manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 SAMPLING

9.1 Unless otherwise agreed to between the supplier and the purchaser, the procedure given in IS 2500 (Part 1) shall be followed for sampling inspection. The inspection levels, Acceptance Quality Limit (AQL) and the type of sampling plan for various characteristics shall be as given in **9.1.1** and **9.1.2**.

9.1.1 For shape and dimensions, and workmanship and finish a single sampling plan with Special Inspection Level S-4 and AQL of 2.5 as given in Tables 1 and 2A of IS 2500 (Part 1).

9.1.2 For hardness, a single sampling plan with Special Inspection Level S-3 and AQL of 2.5 as given in Tables 1 and 2A of IS 2500 (Part 1) shall be followed.

10 PACKING

Shall be as per the best prevalent trade practice.

ANNEX A (Foreword)

COMMITTEE COMPOSITION

Bicycles Sectional Committee, TED 16

<i>Organization</i>	<i>Representative(s)</i>
Bicycle & Sewing Machines (R&D Centre), Ludhiana	SHRI PARAMJEET SINGH (<i>Chairman</i>) SHRI R. S. BAINS (<i>Alternate</i>)
All India Bicycle Manufacturers Association, New Delhi	Ms REENA DAYAL
Atlas Cycles (Haryana) Limited, Sonapat	SHRI VIKRAM KAPUR SHRI GIRISH KAPUR (<i>Alternate</i>)
Avon Cycles Ltd, Ludhiana	SHRI ONKAR SINGH PAHWA SHRI B. S. DHIMAN (<i>Alternate</i>)
Avon Ispat & Power Limited (Rim Division), Ludhiana	SHRI HARCHARAN SINGH SHRI ASHWANI KUMAR BHAKHAN (<i>Alternate</i>)
Bhogal Sohis (Regd), Ludhiana	SHRI NAGINDER SINGH BHOGAL SHRI RATINDER SINGH BHOGAL (<i>Alternate</i>)
Controllerate of Quality Assurance (Vehicles), Ahmednagar	SHRI A. J. PAWAR SHRI V. K. SINHA (<i>Alternate</i>)
Department of Industrial Policy & Promotion, New Delhi	SHRI M. M. ALI KHAN SHRI B. C. NAYAK (<i>Alternate</i>)
Director of Industries, Ludhiana	GENERAL MANAGER SENIOR TECHNICAL OFFICER (<i>Alternate</i>)
Directorate General of Supplies and Disposals, New Delhi	SHRI S. M. MUNJAL SHRI P. M. WANJARI (<i>Alternate</i>)
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Eastman Industries, Ludhiana	SHRI JAGDEEP SINGH
Govind Rubber Ltd, Distt Ludhiana	SHRI VINOD PODDAR SHRI S. P. SUKHRANI (<i>Alternate</i>)
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Hartex Rubber Ltd, Hyderabad	SHRI K. SUBRAMANIAN SHRI N. MOHAN SUNDARAM (<i>Alternate</i>)
Hero Cycles Ltd, Ludhiana	SHRI S. K. RAI SHRI Y. N. GUPTA (<i>Alternate</i>)
J. K. Cycles, Ludhiana	SHRI JOGINDER KUMAR
Kular Cycle Industries, Ludhiana	SHRI AJIT SINGH SHRI DARSHAN SINGH (<i>Alternate</i>)
Metro Tyres Limited, Ludhiana	SHRI L. K. MATHUR SHRI SANJEEV SOOD (<i>Alternate</i>)
Nova Bicycle Industries, Ludhiana	SHRI HARMINDER SINGH PAHWA SHRI ROHIT PAHWA (<i>Alternate</i>)
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Seth Industrial Corporation, Ludhiana	SHRI B. K. SETH
T. I. Cycles of India, Chennai	SHRI S. SADISH KUMAR SHRI V. DURAIRAJ (<i>Alternate</i>)
United Cycle & Parts Manufacturers Association, Ludhiana	PRESIDENT
BIS Directorate General	SECRETARY (<i>Alternate</i>) SHRI RAKESH KUMAR, Scientist 'F' and Head (TED) [Representing Director General (<i>Ex-officio</i>)]

Member Secretary
SHRI P. S. MUJRAL
Scientist 'E' (TED), BIS

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This Indian Standard has been developed from Doc: No. TED 16 (589).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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